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ABSTRACT

Current interest and controversy about the use of microcomputers with young children led to a study of 13 3- to 5-year-old girls and boys enrolled at the De Anza College Child Development Center in Cupertino, California. Designed to determine the effectiveness of the computer in enhancing language experiences and development of cooperative play among preschool children, the study used guidelines intended to maximize the children's participation in social and cooperative play behavior while at the computer. Subjects were videotaped for 6 consecutive weeks as they played at either an Apple IIe microcomputer or two of four non-computer activities: playdough, blocks, art with coloring pens, or a fishing game. Counts were made of language events and cooperative play among the children in both computer and non-computer activities. The results of the study indicate that language activity, measured as words spoken per minute, was almost twice as high at the computer as at any of the other activities. Frequency of cooperative play at the computer and fishing game were comparably high--96% and 98% respectively. Cooperative play at blocks was 27%, at playdough, 14%, and at coloring pens, 8%. Although cooperative play at the computer was slightly lower than at the fishing game, the computer was the only activity that resulted in high levels of both language development and cooperative play simultaneously. Appendices contain a summary of the guidelines and procedures used for the study, a form for evaluating software, and tables and figures. (JB)

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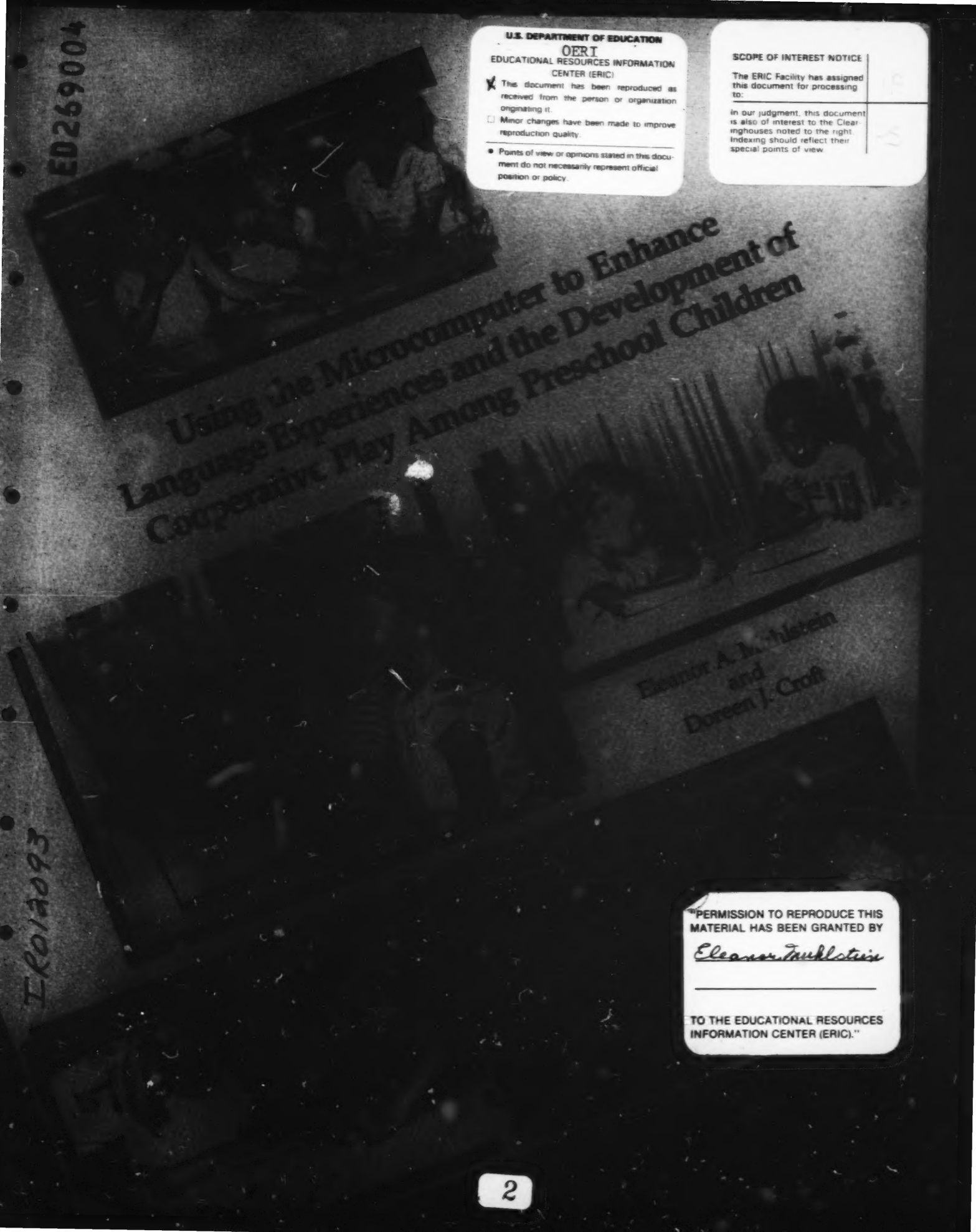
Using the Microcomputer to Enhance Language Experiences and the Development of Cooperative Play Among Preschool Children



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USING THE MICROCOMPUTER TO ENHANCE LANGUAGE EXPERIENCES AND THE DEVELOPMENT OF COOPERATIVE PLAY AMONG PRESCHOOL CHILDREN

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ABSTRACT

Current interest and controversy about the use of microcomputers with young children led to a study of thirteen 3 to 5 year old girls and boys enrolled at the De Anza College Child Development Center in Cupertino, California. The study was designed to determine the effectiveness of the microcomputer to enhance language experiences and development of cooperative play among preschool children.

Guidelines intended to maximize the children's participation in social and cooperative play behavior while at the computer were used during this study. These guidelines were developed through classroom use and observations during the prior two years.

A computer activity area consisting of an Apple IIe computer, a color video display and selected software was set up in a classroom large enough for 25 to 40 preschool children. The computer was one of several free choice activities in which the children could participate.

Over a period of six consecutive weeks, each child was video taped while working with the computer and while engaging in at least two of four non-computer activities: playdough, blocks, art with coloring pens, or a fishing game. Counts were made of language events and cooperative play among the children in both computer and non-computer activities.

The results of this study indicate that language activity, measured as words spoken per minute, was almost twice as high at the computer as at any of the other activities.

Frequency of cooperative play at the computer and the fishing game were comparably high - 96% and 98% respectively. Cooperative play at blocks was 27%, at playdough, 14% and at coloring pens, 8%. Although cooperative play at the computer was slightly lower than at the fishing game, the computer was the only activity that

resulted in high levels of both language development and cooperative play simultaneously.

Using the guidelines presented (see Appendix A), the computer was effective for enhancement of language experiences and the development of cooperative play behaviors among preschool children.

USING THE MICROCOMPUTER TO ENHANCE LANGUAGE EXPERIENCES AND THE DEVELOPMENT OF COOPERATIVE PLAY AMONG PRESCHOOL CHILDREN

Eleanor A. Muhlstein and Doreen J. Croft

INTRODUCTION

In recent years, the influx of microcomputers in education has been so dramatic that hardly a teacher or administrator is untouched by the technological revolution. Pressures to use the computer to enrich the teaching/learning environment and parental pressure to have "accomplishment" replace "play" (The Washington Post, 1983) are forcing educators to examine their philosophies and to look closely at how children think and learn.

There is concern among many that microcomputers may interfere with the social and emotional development of children, making isolates of the youngsters. Researchers warn that "preschool children are not ready for work with computers; they need real-world experiences instead" (Barnes and Hill, 1983). At the same time, others urge educators to "Start early! The preschool level provides an excellent psychological conditioning period to introduce computers" (Palamara, as cited in Long, 1982, p. 312). MIT researcher Radia Perlman states, "The most important thing the child learns in a computer environment is a fearless, joyful attitude toward learning" (Perlman, 1976). Other researchers (Swigger, 1983, Shade, 1983) have found that children have a strong interest in computers and are highly motivated to play with them. To date, not enough research has been carried out to provide definitive answers about the effects of microcomputers in the preschool.

At the De Anza College Child Development Center where student teachers, parents, and certificated teachers work together, we became aware of the questions many of them faced in making choices for curriculum planning. Should

microcomputer experiences be included as part of the daily activities? Why, or why not? Hartup (1978, p. 131) stresses "peer relations affect the course of socialization as profoundly as any social events in which children participate." According to Piaget's theory, "peer group social interaction is the primary factor that acts to dissolve egocentrism" (Wadsworth, 1984, p. 82). Does time spent on the microcomputer detract from socialization or interfere with language development, both so important in the early years of a young child's development? Can teachers incorporate the use of a microcomputer in their classroom without compromising other aspects of the curriculum?

The purpose of this study was to answer the following questions:

1. Given a microcomputer to be used in the preschool classroom, can guidelines and teaching strategies be developed to assist adults in using the microcomputer to enhance language experiences and development of cooperative play?

2. How does the microcomputer in conjunction with specific software, compare with traditional preschool activities, i.e., playdough, blocks, art, and table games, in the enhancement of language experiences and the development of cooperative play?

METHOD

Subjects

Subjects for the study were eight boys and five girls enrolled in a class for 3 to 5 year olds at the Child Development Center, De Anza College. The ages of the children, at the start of the study, ranged from 3 years, 8 months to 5 years, 6 months, with a mean age of 4 years, 7 months, and a median age of 4 years, 8 months. The children were from various racial and ethnic backgrounds. Sixty-one percent lived with both parents while 39% lived with a single parent. The parents' education varied from no high school diploma to earned doctorate degrees. A second language was spoken at home by 31% of the children but all usually spoke English at home and at school. Monthly income ranged from $424.00 to $6000.00.

Setting

The Child Development Center is located on the campus of De Anza Community College in Cupertino, California. The Center serves children whose parents attend classes at the college between 7 a.m. to 5 p.m. five days a week. Subjects of this study were assigned to one of the four classrooms. Both indoor and outdoor settings are spacious and well equipped to encourage exploration, free play and cognitively-oriented activities. The daily schedule for the classroom in which the computer was used is shown in Table 1.

Equipment

The children were video taped using a Panasonic video camera and tape recorder. An automatic clock within the camera displayed the time on the film. The camera was mounted on a tripod equipped with wheels and an equipment shelf. A small wireless microphone was placed within three feet of the children being filmed. The portable video cassette recorder and the microphone receiver were placed on a shelf below the camera.

Procedure

Thirteen children (eight boys and five girls) were video taped during the morning for six consecutive weeks as they played at the computer, with playdough, in the block area, with a fishing game, and with coloring pens. The children participated freely at their choice of activities and remained at each activity only as long as they wished. Because of this freedom, samples were interrupted at times and varied in length. However, we feel this problem was offset by maintaining normal classroom conditions, thus increasing the ecological validity of the study.

The effects of having a camera in the classroom were offset by introducing the camera and video taping intermittently for two weeks before the study began. The camera was operated solely by the classroom teacher (Muhlstein) who was known by the children. After several days the children appeared to be accustomed to the presence of the camera and no longer paid attention to it.

The microcomputer was used in the classroom for one year prior to the study (1983-84). During that time, observations were made and guidelines for its use emerged (Appendix A). These guidelines sought to enhance the classroom goals, two of which are language experiences and development of cooperative play.

All children were filmed at the computer and at least two of the other activities. The average video tape sample duration at the computer was 11.7 minutes; at the fishing game, 6.8 minutes; at blocks, 11.9 minutes; at playdough, 15.7 minutes; and at coloring pens, 7.5 minutes. Details of the number of children filmed at each activity and the length of data samples are presented in Table 2.

To determine minimum representative sample length, we measured average word rate for varying lengths of time on the same sample. This was done for several samples. It was found that the average word rate at 4 minutes was within +/- 10% of the word rate for longer times of the same sample. Additional details about the average length of data samples for girls and boys and the longest and shortest data samples are contained in Table 3.

SELECTION OF ACTIVITIES

A study by Quilitich and Risley (1973) shows that some toys promote more social activity than others. This and other research reviewed by Asher, Renshaw, and Hymel (1982) identified dramatic play, wooden blocks and trucks as being conducive to social play, while coloring pens, playdough and puzzles were categorized as isolate activities. Based on the above studies, blocks and a table top fishing game are social activities and playdough and coloring pens are isolate activities.

Computer and Software

Children played in groups of two at the computer. A sign-up sheet was used for children wanting a turn. During play, each child decided when to leave the computer. When a space became available at the computer, the supervising teacher would tell the next child on the list it was his/her turn. Only occasionally was it necessary to limit the length of time a child spent on the computer to ensure everyone a turn.

It should be remembered that this study does not evaluate the computer alone, but instead evaluates a system consisting of a computer and specific software. The software was selected according to the criteria shown in the software evaluation form in Appendix B. The purpose of this form is to assist in selecting age appropriate, interactive, self esteem building software for young children.

Each day, one software game was selected for use. The teacher was responsible for explaining the mechanics of the software and observing long enough to be assured that the children understood how to play the game. The teacher would then leave the immediate area of the computer but remain close enough to help or offer supportive comments as needed.

Although a variety of software was used in the classroom during the time of the study, for the purposes of the study, only Facemaker, Build a Face, by Spinnaker was included in the data. Facemaker, Build a Face, meets all the criteria on the software evaluation form. Using this software, the children can build faces by selecting various facial features from a menu. The children can continue selecting features building and rebuilding the face.

Blocks

The block area was a carpeted rectangle six feet by nine feet. On three of the four sides of the carpet were, respectively, a set of wooden blocks, a tub of screw-together tubes, a wooden doll house with furniture and dolls, and several bins of cars, trucks, and animals for use in conjunction with each other. The children were free to use the materials in any way they chose.

Pens

The coloring pens were on a table five feet by two feet entirely covered with one continuous sheet of butcher paper. Six chairs were placed around the table. Several sets of coloring pens were placed in the center of the table. A "set" consisted of a 4"x4" plaster of paris container which held nine pens upright. The children helped themselves to the pens and drew freely on the paper. They also were free to sit, stand, or move about in any way they chose.

Playdough

The playdough activity was set up at a table surrounded by four to six chairs. In the center of the table was a large lump of colorful playdough and assorted cookie cutters, plastic knives and rollers. The children were free to play with the materials in any way they chose.

Fishing Game

The fishing game consisted of a plastic tube fishing pole with a string and magnet on the end. A collection of fish made of poster board were colored and numbered on one side. A paper clip was attached to each fish. The fish were placed in the center of a table, color and number side down. The children took turns fishing with the pole and magnet until all the fish were caught. A turn consisted of the magnet engaging the paper clip and the child landing a fish.

PROCEDURE FOR ANALYZING DATA

After filming, each videotape was reviewed a minimum of three times. The tape was first viewed for general content, noting number of interruptions, voice level and duration of sample. During the second viewing, the number of words spoken by one of the children was counted. During the third viewing, the percent cooperative play for the same child was counted. The entire above procedure was repeated to obtain the data for each child.

Only child to child language and cooperative play were counted. All adult interactions were eliminated from the samples. The amount of time used by these interactions was also deducted. Interactions with adults were defined as any words listened to or spoken by the child to an adult, and any physical behaviors directed to an adult such as looking at, smiling at, touching, giving something to or receiving something from an adult.

Interruptions by children were also eliminated. These interruptions were defined as any time a child not currently engaged in the activity interrupted the activity with words or actions but instead of joining the activity moved on to something else. If the interaction resulted in the child joining the activity, the cooperative play and words were counted.

Language Experiences

The words per minute spoken by the child were used to characterize language experience. Words were defined as any speech from the child heard on tape except noises such as humming, simulation of sounds such as car motors, animals, and laughing. Samples where individual words could be distinguished even though not fully understandable, were counted.

Cooperative Play

Cooperative play was defined as two or more children working together for a common goal such as helping one another build something, creating a final product or playing a game together. Behaviors such as taking turns, attentiveness to a common goal, verbal exchange ending with a shared common goal, helping, talking together to coordinate an activity, sharing roles in an activity such as playing house and following rules of a game were counted as cooperative play.

Some examples of behaviors not counted as cooperative play were inattentiveness to a common goal while waiting for a turn in a game, each child building his/her own thing alongside another child, playing close to each other but not having a shared common goal.

For determining percentage of cooperative play, the beginning and end time of the cooperative play segment was carefully reviewed using multiple viewings as necessary. Percent cooperative play was computed by dividing the length of time a child's behavior conformed to the criteria for cooperative play, by the total valid time of the observation.

RESULTS AND DISCUSSION

Language Experiences

The results showing a comparison of language events at the computer, the fishing game, blocks, playdough, and coloring pens, are shown in Figure 1. At the two social activities - the fishing game and blocks - the speech rate was about the same, at 18 words per minute. At the two isolate activities - playdough and coloring pens - the speech rates of 19 and 16 words per minute were about the same as for the social activities. Thus we observed no significant difference in the speech rates among the four activities. The speech rate at the computer, however, was about 34 words per minute, almost twice as high as at any of the other four activities.

Cooperative Play

The results showing a comparison of cooperative play at the computer, a fishing game, blocks, playdough, and coloring pens are also shown in Figure I. Cooperative play at the computer was about the same as or higher than any other activity. Cooperative play at the social activities - blocks and the fishing game - fell between 27 and 98 percent, while cooperative play at the isolate activities - coloring pens and playdough - fell between 8 and 14 percent. Thus, activities which were social tended to have substantially higher cooperative play. Specifically, the two social activities had about 2 to 12 times as much cooperative play as the two isolate activities which is consistent with the cited research.

The percent cooperative play measured for the computer and the fishing game were essentially the same at 96 and 98 percent. Although the percent cooperative play was about the same, the nature of the cooperative play at the two activities was very different. At the computer the children exchanged ideas, asked each other questions, helped each other (exhibited assisting behaviors), taught each other, and took turns, whereas cooperation during the fishing game was limited to taking turns and attentiveness to the game. At times it was unclear whether the child was mentally involved with the game or merely waiting for a turn. For those instances in question, the behavior was counted as cooperative, thus resulting in a possibly higher than actual cooperative play attributed to the fishing game.

A comparison of the simultaneous occurrence of language (shown as word rate) and cooperative play is presented in figure 2. This figure shows the average cooperative play and word rate (solid symbol) and the area containing the individually averaged (for cases of multiple recording sessions) results for all children. The size of the area enclosing all data samples and the location of the overall average within that area indicate the range of the data. A circular area indicates variation in both quantities whereas a flattened area indicates much more variation in one quantity than the other.

On this figure (Fig. 2), simultaneous occurrence of a high word rate and a high percentage of cooperative play appear in the upper right corner while conversely low word rate and low percentage of cooperative play occur in the lower left corner. Note that fishing and the computer activity occupy totally different regions of the figure than do the other three activities. The computer is high in both word rate and cooperative play. The fishing game is also high in cooperative play but significantly lower in word rate. The other three activities - blocks, playdough, and coloring pens - are low in both word rate and cooperative play. This figure shows very clearly that the computer was the only activity which simultaneously resulted in a high word rate and high percentage of cooperative play.

In order to maximize accuracy of data, all samples at the computer were obtained while using the same software program. Although we do not know what effect other software would have on word rates, we believe most open-ended software (software which has no defined end of game) would produce similar word rates. Additional research needs to be done in this area.

CONCLUSIONS

The results of this study indicate that language experiences, measured as words spoken per minute, was almost twice as high at the computer as at any of the other activities. Cooperative play at the computer and the fishing game were comparably high - 96% vs. 98% respectively. Cooperative play at blocks was 27%, at playdough, 14% and at coloring pens, 8%. Although cooperative play at the computer was slightly

lower than at the fishing game, the computer was the only activity that resulted in high levels of both language experiences and cooperative play simultaneously.

By using the guidelines and procedures presented in this study, the microcomputer is effective in enhancing language experiences and the development of cooperative play among preschool children.

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APPENDIX A

GUIDELINES FOR USING THE MICROCOMPUTER TO ENHANCE LANGUAGE EXPERIENCES AND THE DEVELOPMENT OF COOPERATIVE PLAY AMONG PRESCHOOL CHILDREN

In this section, we summarize the guidelines and procedures we followed for set-up and use of the computer with the children. The guidelines are an outgrowth of two years of observations of approximately 75 children using the computer at De Anza College Child Development Center, children at other preschools, and the desire to use computers in a manner consistent with our goals of early childhood education, three of which are to provide opportunities through play for developing 1) self esteem, 2) social growth, and 3) language development. We based our procedures on the use of one computer with 25 four-to-five year olds where the computer is one of many activities in the classroom.

Some of the guidelines are especially applicable to the use of the computer; others are extensions of well established professional standards. We found the following to be especially effective in encouraging social interaction and the consequent verbal and cooperative behaviors.

1. LOCATION OF THE COMPUTER. We placed the computer in a location that enabled the teacher to glance over the entire room easily while sitting beside the children at the keyboard. It was adjacent to an area requiring minimum supervision so the teacher could assist in more than one activity. We provided it as one of many choices for children in the room.

2. COMPUTER SET UP. We placed two chairs directly in front of the keyboard, with a third chair set along side for the teacher. At times children gathered to watch and listen while others operated the computer. This may aid the observing children in learning a new game, although it can also turn into passive waiting. We discouraged passive waiting when it occurred because it created anxiety on the part of the users as well as the children who were waiting.

3. ADVANCE PREPARATION. Teachers and aides were expected to be thoroughly familiar with the computer and software. For example, they were encouraged to read the manual, play the game, modify the keyboard if necessary, and generally to think through and determine the most simple and clear way to introduce the game. We found that a well prepared teacher was better able to direct his/her energies and attention to helping the children, to handling problems more skillfully, and to modeling a confident and positive approach to the experience.

Most software manuals do not give specific instructions for modifying the keyboard. We found that a few moments of preparation enhanced the computer experience by making it easier for non-readers to locate keys and to help each other play the games. For example, in several computer programs, the I, J, K and M keys are used to move objects on the screen. We labeled the keys with directional arrows on masking tape.

Very young children or beginners may need other keyboard modifications. For example, to simplify locating numbers the teacher may want to cover the keyboard with cardboard cut to expose only the numbers; or place a colored self-stick label on each number. (The labels should have the numbers on them.)

For older or more experienced children who are ready to exit from a game and return to the menu, other keyboard modifications are helpful. Most programs use a specific key that stops the game and returns to the menu. On most it is the ESC key, but on some a different key is used. To help children locate the correct menu key for each disk, place a red self-stick dot on the appropriate key. Each time the disk is changed check that the red dot is on the appropriate key.

With some alphabet games, only certain letters of the alphabet are used at one time. Placing a green self stick dot on each key that "works" makes the game easier for very young children. (The dots should have the letter written on them.)

Some games require the use of a joystick. We found it helpful to make the joystick's movement correspond with object movement on the screen. Pushing up on the stick should move an object in the same direction on the screen, and so on. Mounting can be accomplished by placing a joystick on a slanted upright support or taping it to the front edge of the computer.

4. SOFTWARE SELECTION. We selected the software using the software evaluation form in Appendix B. Using a variety of appropriate software and rotating their use during the school year enhanced the novelty of the programs for the children.

5. INTRODUCING CHILDREN TO THE COMPUTER. We began the computer experience by using software that required no keyboard knowledge. We selected "Butterfly", a game on the Juggles' Rainbow disk by The Learning Company. Pressing any key elicited a response on the screen. This allowed the children to explore and experiment and feel the cause (pressing key) and effect (response on screen). We encouraged them to notice the three fold connection between their body, the keyboard, and the monitor. Details of this procedure are outlined on page 377 of Croft and Hess (1985). Children were not able to play the games on their own or with other children until the cause-effect relationship became internalized. Children who had not had some individual time on the computer and those under three years six months appeared less inclined to share the computer.

6. USING A SIGN-UP SHEET. We placed a sign-up sheet on a clipboard next to the computer so the child or the teacher could sign up the child for a turn. Children played in flexible groups of two. The groupings changed as individuals gave up their seats. Signing up appeared to relieve anxiety which often accompanied waiting for a turn. The children could enjoy another activity of their choice, confident that they would be called to the computer when a space was available. Because they did not have to wait passively, they were less likely to feel anxious and did not tend to dominate the keyboard when it was their turn.

The flexible groupings of two facilitated mixed age and sex interaction, and enabled children to make new acquaintances, exercise social initiation skills, and to develop one-to-one relationships.

7. GAME SELECTION PROCEDURE. We selected one game from the several that were on the disk. We used that game until all children became familiar with it. Then we selected another game, repeating the same process. This procedure accomplished several things: first, the time each child spent at the computer was determined by the child, not the teacher. The time became self-limiting (because of the child's attention span for a single game) thus creating a free flow of children taking turns. It eliminated the problem of children dominating computer usage, and the corresponding need for the teacher to set time limits. There were only few occasions when the teacher needed to suggest that a child move on to another activity. Depending on the age of the child, somewhere between five and ten minutes seemed appropriate. A teacher's sense of timing is the best judge. Second, the one-game approach used in conjunction with the sign-up sheet allowed children to know in advance what game to expect.

In our study, using the sign-up sheet, playing in flexible groups of two, and using the one-game approach, helped create successful groupings that might not have taken place under other circumstances. The structure created a "safe place" to play with someone new where children of opposite sex and different ages became acquainted and some also made plans to play together later at another activity.

Finally, the confidence gained from familiarity with many games as they were presented one-by-one provided a good basis for the children to learn the more complex procedure of exiting games and making their own choices using the disk menu.

When most of the children were familiar with the games (not in this study) we showed them how to exit the games and return to the menu to make another selection. With this newfound skill, the children remained longer at the computer because their interest was renewed as they changed from game to game enjoying the power and control they were exercising. This approach also tended to produce a dominant user group and the necessity for the teacher to set time limits.

8. PLAYING THE GAME. We introduced each child to the game and to the specific keys they needed to use. Directions were generally phrased in the form of questions which, when the child answered, resulted in an understanding of a direction through the child's own thinking. For example, "Can you show me the bar on the screen?" (child points to screen) "Yes, now let's press the spacebar (teacher pointed while child pushed spacebar) and see what happens to the bar on the screen." We helped children find a particular key by running our finger along a row of keys and saying, "It is somewhere in this row."; or we pointed to a particular key, and the child pressed the key. We found it best not to intervene to help children find correct answers. Children discovered that one step leads to another and that their choice determined the outcome.

9. GAME TURN-TAKING. We established clear rules with the two children as to what constituted a turn within the game. The turn was determined in various ways. Often it was determined by completing the shortest cycle in a game such as selecting and placing ears on a face in Facemaker, uncovering two pictures in Match-Up (Reader Rabbit), or selecting a letter and re-using it to cause graphics movement in Charlie Brown. It varied according to how the software was written. We were careful not to place undue emphasis on correct answers which seemed to promote competition rather than cooperation. We supported the children as they enforced turn taking, and then stepped aside encouraging independence. Once children were familiar with taking turns, their interactions focused on assisting, teaching, and other cooperative behaviors.

10. USING A POSITIVE APPROACH. The children tended to reflect the teacher's positive approach. For example, when the teacher said things like "That didn't seem to work; let's try another key," or "That's O.K., let's try again," the children often used the same techniques as they taught and helped each other. The importance of being right or wrong was de-emphasized and the process of exploring and discovering became more prevalent. We found that the teacher's positive approach was key to cooperative play and enhanced the children's self esteem. The teacher's confidence, enthusiasm, and curiosity further enriched the computer experience for the children.

11. WORKING TOGETHER. We encouraged children to share ideas, help each other, and to talk and work together as a team. The computer provided a unique structure in which they began to become interested in each other. Children strengthened social bonds as well as formed new relationships. The computer experience provided an opportunity to understand and be understood, to give and to take. By playing successfully together at the computer, they gained confidence in themselves and their interactions with others. The computer activity gave the children something to talk about and a safe place to exchange ideas. It was a chance for them to realize how successful they could be when accepting and giving help. We encouraged children to do their best rather than comparing one child's performance with another. We also encouraged feelings of respect for each other and pride in working together.

12. RECORDING PROGRESS. We observed the children playing and kept written records of their progress which helped us select appropriate software for the next day. We listed the child's name, date, game played, and our comments relating to the child's mastery of the game. Each child learned or experienced something different from the software according to his/her developmental level. It was interesting to observe a three year old experiencing delight over the power and control of making things happen while a four year old might be engrossed in a task of matching, discrimination and memory and a five year old totally concentrating on skills of a more advanced level. Given well designed software and positive teacher support, children of mixed ages played successfully on the computer.

APPENDIX B

EVALUATING SOFTWARE FOR PRESCHOOL CHILDREN

Name of Disk _____

Name of Company _____

Name of Game _____

Names and ages of children involved with preview _____

_____

_____

Note: Games on one disk may vary in appropriateness and quality.

Rating Scale: 1-5 (5 is high)

Step 1 - Without child, preview, looking for following qualities:

	Rating
1. Clear objective _____	_____
2. Colorful, playful, graphics and appropriate sound _____	_____
3. Positive reinforcement rather than negative sounds and graphics _____	_____
4. Absence of violence _____	_____
5. Pace and control determined by child _____	_____
6. Highly interactive with child _____	_____
7. Lets child make decisions _____	_____
8. Uses standard commands _____	_____

9. Requires thinking and/or exploring _____ _____

10. Developmentally appropriate _____ _____

11. Is open-ended (no defined end of game) _____ _____

Step 2 - With child, preview, looking for the following qualities:

1. Does the child appear to enjoy the game? _____ _____

2. Do the graphics relate to the "child's world"? _____ _____

3. Is it easy to use? _____ _____

4. Does it have a picture menu? _____ _____

5. Is there positive feedback? _____ _____

6. Does it hold the child's attention after the initial time or two? _____

7. Does it interest both boys and girls? _____ _____

Additional Comments:

_____

_____

_____

_____

Evaluator: _____ Date _____

TABLE 1

Daily Schedule - Room 21

7:00 - 8:00	Early arrivals received in Room 17
8:00 - 9:20	Breakfast Inside activities: library corner - manipulatives - blocks - dramatic play - math activities - science - computer
9:10 - 9:20	Clean up and transition to large group circle
9:20 - 9:45	Large group activities: storytelling - singing - creative movement - rhythm band - dancing - group games - calendar - birthday celebrations - special events
9:45 -10:30	Centers and decision-making time: art - cooking - computer - science - creative expression - language/writing/listening - literature - math activities - dramatic play
10:30 -10:45	Transition to snack tables - snack - transition to outdoors
10:50 -11:40	Outdoor Activities: upper yard and bikes- emphasis on large motor skills, spatial awareness and social interaction
11:40 -11:45	Transition from outdoors to small group
11:45 -12:10	Small Groups: Children will be developmentally grouped. Cognitive activities will be stressed. All teachers rotate with all groups.
12:10 -12:15	Transition to lunch
12:15 -12:45	Lunch
12:45 - 1:30	Outdoor play
1:30 - 1:45	Room 25 joins us for outdoor play
1:45 - 2:00	Transition to story time
2:00 - 2:10	Story time
2:10 - 3:00	Rest time
3:00 - 5:00	Snack and indoor/outdoor time

NOTE: Schedule will be adjusted on rainy days.

Table 2
Number and Total Duration of Data Sessions For Each Child

ACTIVITIES

	COMPUTER		FISHING		BLOCKS		PLAYDOUGH		PENS	
Child No.	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min
1	1	6.58	1	8.28			1	8.13	1	7.63
2	2	10.98	1	5.97			3	23.18	1	5.00
3	1	6.77	1	5.08	2	14.08	1	7.77		
4	3	14.18	2	14.46	1	5.63	2	8.32		
5	2	8.11			1	6.82	3	24.98	1	13.45
6	1	6.67	1	3.65	1	4.93	1	7.58		
7	3	18.00	1	8.93	2	11.50	3	17.90		
8	3	20.31			4	27.82	3	17.86		
9	1	6.23			1	9.93	2	12.90		
10	2	12.58			1	7.23	1	6.75		
11	3	17.24			2	11.77	4	36.73		
12	3	13.00			3	19.86	4	23.20	1	6.08
13	2	10.96	1	4.90	2	11.77	1	9.07	1	5.23

Table 3
Summary of the Number and Duration of Data Sessions

	COMPUTER	FISHING	BLOCKS	PLAYDOUGH	PENS
Number of Children	13	7	11	13	5
Number of Sessions	27	8	20	29	5
Total Time, All Sessions, Min.	151.6	47.3	131.3	204.4	37.4
Mean Duration of Total Data, Min. Per Child	11.7	6.8	11.9	15.7	7.5
Shortest Duration of Data, Min.	6.2	3.7	4.9	6.8	5.0
Longest Duration of Data, Min.	18.0	10.5	27.8	25.0	13.5

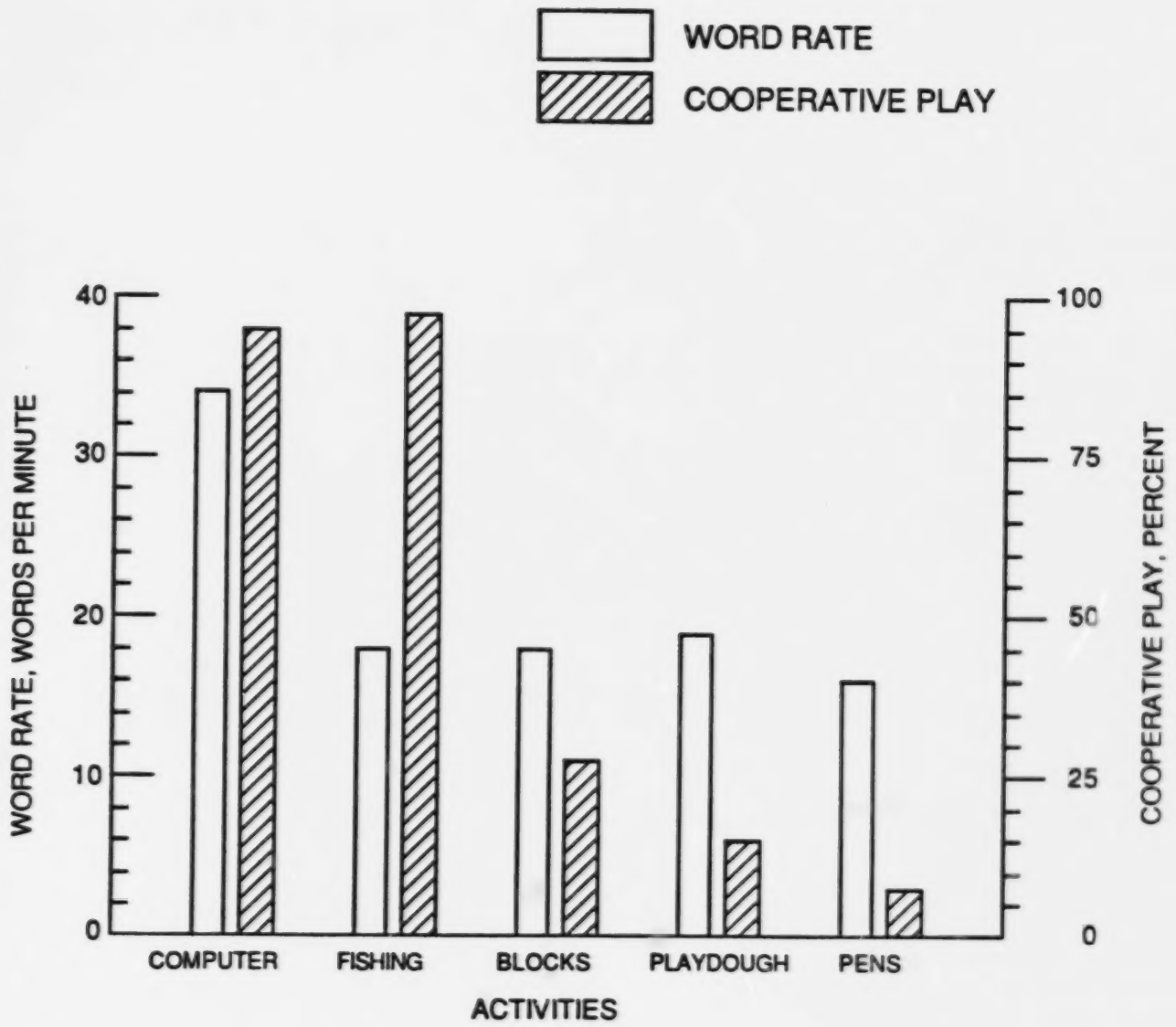

Figure 1
Measured Word Rate
and Cooperative Play

Table 2
Number and Total Duration of Data Sessions For Each Child

ACTIVITIES

	COMPUTER		FISHING		BLOCKS		PLAYDOUGH		PENS	
Child No.	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min	No. of Sessions	Total Time, Min
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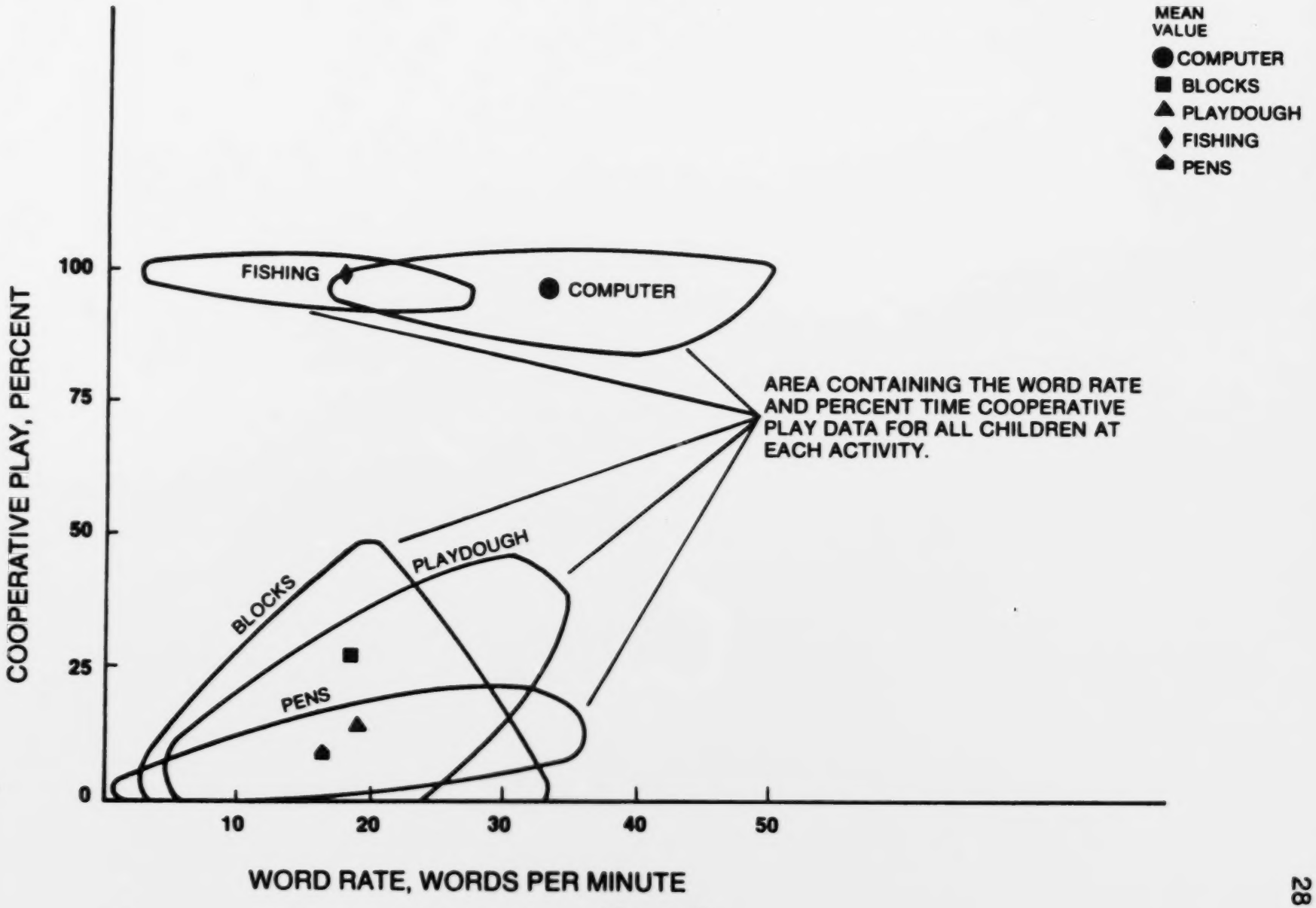

Figure 2
Range of Word Rate and Percent Time Cooperative Play for All Children at Each Activity

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